

and terminal peritonitis all point to this. The case, however, presents many problems of interest. It started with tonsillitis probably of streptococcal origin, and at that time there was no albuminuria. The question arises, then, Did the tonsillitis pass on to a septicaemia, and cause a streptococcal interstitial nephritis, or did the toxin circulating in the blood from the focus in the throat cause the kidney trouble, leading to a general lowering of resistance, which allowed the streptococcus to get a footing in the general circulation? In other words, was this nephritis of pyaemic or toxic origin?

Personally I am inclined to the former view. I admit that no organism was demonstrable in the sections, and the fact of its growing from the kidney pulp can be explained by a general blood infection. I support my case entirely on the microscopical abscesses in the interstitial tissue of the kidney, and on the clinical course of the case.

My thanks are due to Captain McLeod, R.A.M.C., who did the bacteriological work, and to Dr. Amecielle, of the French medical service, who got the tissues sectioned for me, and gave me his valuable opinion on them.

INJURY TO THE INTERNAL EAR PRESENTING SOME UNUSUAL FEATURES.

BY

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SOLDAT D. was admitted on December 29th, 1915, with a bullet wound of the head.

Entrance wound left frontal eminence. No exit wound. Skiagrams (1) on admission, showed no bullet, but only splintered bone below the wound; (2) on February 2nd, showed no bullet, but a rarefied area, where at operation the bone spicules had been removed.

Treatment.—On admission the patient was anaesthetized and trephined. Fragments of bone were removed from the frontal lobe of the brain and the wound dressed with gauze. There was nothing to suggest a fractured base. There were no signs of focal injury nor of intracranial pressure. As regards his head wound, the patient made an uninterrupted recovery.

Evidence of cerebral irritation (sulkiness, mischievousness, resentment of any one approaching him) persisted for some days, and disappeared with the sudden onset, on January 8th, of escape from the left ear of fluid, which flowed slowly but steadily, was quite clear, and reduced Fehling's solution. With the flow of cerebro-spinal fluid all signs of cerebral irritation ceased. The flow persisted until January 24th.

Otoscopy.—The right ear was normal. In the left ear, half an inch from the external meatus, a sessile swelling of the bony roof bulged downwards, occluding three-quarters of the meatal lumen and preventing inspection of the membrane. It was covered with intact skin, sensitive and stony hard to the probe, and resembled a meatal exostosis. It was impossible to be certain that it was the result of the injury. This appearance persisted unchanged as long as the patient was in hospital, so that the membrana tympani was never seen.

Hearing was at first good, and equal on both sides to watch, speech, and whisper; no tuning-fork was then available. The hearing on the right remained normal, while on the left it became progressively worse. On January 26th he heard speech left 18', whisper 4'; on February 6th, speech 2', whisper 1'. On February 24th I obtained a tuning-fork (D.V. 512); Weber to right; absolute bone-conduction on left—15 secs. On and after March 5th, for speech, watch, and tuning-fork, both air and bone conduction were nil on the left side.

Equilibrium.—As soon as the patient was well enough to be lifted into a sitting position he fell over on to his left side. In a few days he could sit up without support, and walk unsteadily by January 15th. After January 26th he could walk straight with his eyes open; but with eyes shut staggered to the left. He next developed a crab-like gait (with eyes shut), diverging constantly to the left, and crossing the right foot over the left as he walked, to avoid falling to the left. On and after March 5th his gait was normal, with eyes opened or closed.

Evidence as to Cerebellar or Meningeal Lesion.—There was never any asthenia, dysidiadokokinesis, giddiness, vomiting, or nausea. There was no indication for lumbar puncture or examination of optic discs.

Nystagmus.—No galvanic apparatus or rotation-chair was available. Repeated observations were made, with the head in various positions and water at different temperatures; and the ears were irrigated both separately and simultaneously. The mean results obtained were as follows:

Spontaneous Nystagmus.—On deviation to right: Fine, pure horizontal, never of more than first degree. This became progressively less marked, and no nystagmus was obtainable after February 17th. On deviation to left: No nystagmus.

Caloric Response.—Head backwards 60 degrees; water at 90° F. run in for two minutes. Right: During the persistence of spontaneous nystagmus on deviation this was always made

coarser and raised to third degree. After spontaneous nystagmus had ceased (February 17th), irrigation elicited a similar but less violent normal response. Left: On deviation to this side there was never any response to irrigation. But, for as long as the spontaneous nystagmus to the right persisted, this could always be inhibited for periods varying from two to fifteen minutes by warm irrigation of the left ear.

To test this inhibitory effect of stimulating the left labyrinth on nystagmus to the right, the two ears were simultaneously irrigated several times after February 17th, when spontaneous nystagmus to the right had ceased. But at no time did the irrigation of the left ear have any effect on the nature or duration of the nystagmus obtained by simultaneous irrigation of the right ear.

On his discharge to the base, after ten weeks in hospital, he had on the right side normal caloric labyrinthine response and normal hearing. On the left side, total loss of labyrinthine response and complete deafness. Gait and general health normal.

The signs of cerebral irritation during the early days disappeared suddenly and permanently with the appearance of cerebro-spinal otorrhoea, which again ended spontaneously sixteen days later. Although there had been no classical signs of compression, it seems reasonable to suppose that the irritative stage might have merged into such, and that the cerebro-spinal flow was nature's decompression. The gradual loss of spontaneous nystagmus to the sound side and of a tendency to fall to the injured side, were merely evidence of recovery from partial or complete unilateral loss of labyrinthine function. Since stimulation of the left labyrinth always inhibited any spontaneous nystagmus to the right, but later on failed to inhibit caloric nystagmus to the right, and since also there was a progressive loss of hearing, there was obviously a progressive lesion of cochlear and vestibular apparatus.

The results of caloric tests on the left ear seem puzzling. Whether the lesion was in any part of the left external semicircular canal or in the nervous mechanism proximal to this, it was striking that stimulation should inhibit nystagmus to the right, but never succeed in eliciting nystagmus to the left.

The bullet was never removed from the skull, nor seen in a skiagram. It may never have entered, although the shape of the wound suggested penetration rather than glancing. If it is still in the patient's head, that would not seem to account for the findings here reported.

THE TREATMENT OF DIABETES.

BY

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THE cause of diabetes is looked upon as the result of the faulty action of certain glands, which action appears to result from, or be aggravated by, absorption of toxic products produced in the alimentary tract.

This statement appears to be borne out by the remarkable improvement which takes place in diabetics when the treatment is directed to controlling toxic production in the bowel. The beneficial effects of removing alimentary toxæmia is fully explained in an article on starvation and purgation by Dr. Guelpa of Paris.¹

There is a variation each day in the amount of sugar in the urine of diabetics which takes place independently of treatment. In my opinion this is due to the condition of the bowel, as I have invariably found the sugar content of the urine high when the bowel was loaded; after it was cleared by aperients a reduction in the amount of sugar was apparent.

As the treatment of diabetes by means of a starch-free diet is very irksome to the patient, and often unsatisfactory, I have for several years treated my diabetic patients by fasting, and cleansing of the alimentary tract, at the same time allowing a diet from which starch was not entirely excluded.

As early as three days after commencing treatment, I have invariably found alleviation of the symptoms, the thirst much less, the craving for food not nearly so pronounced, the pruritus, if present, markedly relieved, and the patient all round much better than on a rigid starch-free diet and opium derivatives.

Mode of Treatment.

I thoroughly inspect the mouth, have any defective teeth removed, and enjoin the necessity of thoroughly cleansing the teeth and washing out the mouth frequently.

The fast I begin with is generally about fourteen hours' duration. The best time to commence is in the evening. I allow a light meal about 5 p.m. Two hours after I give a dose of castor oil. The patient can rinse out the mouth with warm water, if desired, two or three times during the fast, but on no consideration must anything be swallowed, not even water, as I find the results are not so satisfactory when water is allowed. At 9 next morning I give a second dose of castor oil and then no food for two hours. By 11 a.m. the bowels have, as a rule, acted, and I allow the patient to have breakfast. There is therefore a period of absolute fasting between the two medicines. In succeeding fasts salines can be used, the object being to secure a thorough evacuation and to reduce the intestinal flora as far as possible. The patient can easily go through the same routine every second night, and after he has become accustomed to the treatment the duration of the fasts should be prolonged by beginning earlier in the afternoon and extending them next day. At the end of a fortnight a fast of twenty-four hours can easily be done two or three times a week.

It is better in the earlier fasts to keep the patients in bed, as I find they are more easily managed and it is pleasanter for themselves as they can more readily keep warm and do not have the same temptation to stop the fast as they would have if they were going about. In many cases the disappearance of the sugar is complete. I generally recommend, however, that there should be one fast of eighteen hours each week carried out in the same way.

If a small quantity of sugar persists I recommend two fasts each week of about fourteen hours, and find this quite sufficient to prevent the other symptoms of the disease from manifesting themselves and to allow the patient to attend to his duties.

The following four cases, selected at random from my notes, are typical of the results to be obtained:

1. Mrs. H., aged 56, thirst very marked, intense pruritus, specific gravity urine 1024, sugar 8 per cent. Had been under treatment previously to becoming my patient; at end of first week after commencing treatment the thirst was almost nil, there was great improvement in the pruritus, and the sugar was only 5 per cent. At end of first month 1 per cent. and no sugar present at end of six weeks.

This patient has an occasional fast and has been working regularly for three years now.

2. D. McF., aged 49, urine specific gravity 1026, sugar 9 per cent., thirst marked, and a considerable degree of mental disturbance. He had previously been under treatment for four months. In six weeks after commencing treatment he returned to his work. Fourteen months ago he went to America and occupies a good position. He does a fast of about eighteen hours once in ten days.

3. Mrs. J., aged 62. When I first saw her the fourth toe on the left foot was gangrenous. The specific gravity of the urine was 1035 and the sugar 11 per cent. Very great thirst and pruritus were present. The toe was removed and wound healed satisfactorily. At end of four weeks after commencing treatment only 2 per cent. of sugar remained, and at end of six weeks none was present. She does a fast of eighteen hours about every six days.

4. J. D. (male), aged 64, specific gravity urine 1028, sugar 8 per cent., and a trace of albumin was present. At end of six weeks no albumin and only a trace of sugar left. The patient felt much better and returned to work. He has kept well and does one fast of fourteen hours in the fortnight.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, October 8th, 1910, p. 1050.

THE British Fire Prevention Committee (8, Waterloo Place, S.W.) has issued a memorandum on the use of a mixture of sawdust and sodium bicarbonate for extinguishing small fires occasioned by the ignition of petrol and other inflammable liquids. The sawdust must be free from shavings and chips, but need not contain added moisture. When applied to the surface of the burning liquid it floats for some time, thus excluding the oxygen of the air and smothering the fire. The addition of sodium bicarbonate is advantageous, for the heat liberates a certain amount of carbon dioxide, which adheres to the sawdust, and slightly assists in extinguishing the fire. The proportion should be about 10 lb. of bicarbonate to one bushel (or, say, 12 lb.) of sawdust. The powder must be applied rapidly and systematically by a sweeping motion of a shovel, so as to cover the whole of the burning surface; the method, it is thought, will prove particularly useful in motor garages and hangars.

NEW FORMS OF PLATING DISHES FOR
THE CULTIVATION OF BACTERIA.

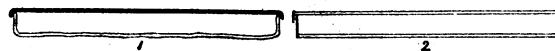
By S. DELÉPINE,

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OWING to the difficulty of obtaining at the present time suitable dishes for making plate cultures I have adopted several devices.

1. The object of the first was to utilize the stock of Petri dishes which I had in the laboratory, which was insufficient when it became necessary to have some eight hundred dishes available daily in connexion with our military work alone.

I had a number of shallow flat metal lids made to fit the tops and bottoms of the existing dishes, so that each Petri dish could be utilized to make two plates, thus doubling the stock available (Fig. 1). I found that these metal lids when well tinned answered their purpose. They, however, require frequent polishing in order to keep the surface smooth and free from rust.



1 One half of a Petri dish with a metal lid to replace the other half. The unevenness of the bottom of the Petri dish is exaggerated.

2. A plating dish made by forcing a glass plate into a flexible metal rim.

2. I have also made plating dishes by inserting round pieces of plate glass in a thin rim of well tinned metal or waterproofed cardboard, etc. (Fig. 2). These plating dishes are very much cheaper than the old-fashioned Petri dishes, and appear to me to be better, because the glass bottom is perfectly flat and of equal thickness, and permits of the media being more evenly spread. They stand sterilization perfectly well, and the bottom is clearly visible up to the edge. I have by numerous experiments ascertained that tin does not appreciably affect the growth of bacteria; aluminium is less suitable, but duralumin could be used instead of tin, if sufficiently thin rims could be made with this alloy.

3. A more expensive form of metal rim has also been made for me, which consists of two concentric rings of well-tinned metal (block tin or duralumin would be better); the inner is screwed into the outer, which is provided with a flange, against which the glass bottom plate is fixed when the inner rim is screwed home (Fig. 3). The advantage of this form, which is more expensive, is that the glass plate can be replaced easily when broken.



3. A "plating dish" made by fixing a glass plate by screwing two metal rings together.

4. A "plating dish" made by fixing a rim of metal to a glass plate by means of coagulated albumin or collodion.

4. A much older design (which I used as far back as 1887, in order to obtain even layers of cultivating media, and plates more suitable for photographic purposes than those made in Petri dishes) is even simpler, but somewhat less convenient than the previous forms. It consists of a square or round tin frame; one surface is perfectly flat, and is fixed to a bottom glass plate by means of coagulated blood serum, collodion, or oxidized linseed oil (Fig. 4).

To make a plating dish with such a frame, a perfectly clean glass plate of suitable size and shape is placed over a metal plate heated to the temperature of boiling water. The surface of the frame which is to be fixed to the glass is painted evenly with fresh blood serum or white of egg. The frame is then pressed with the painted surface against the hot glass, and allowed to remain under slight and even pressure for a quarter of an hour or longer on the hot plate. At the end of that time the albumin is quite coagulated and dry, and the frame is so firmly adherent that sterilization by steam can be carried out several times without causing any separation.

All this apparatus can be obtained from Messrs. Chas. H. Hearson and Co.

REFERENCE.

¹ The Action of some Metals upon Certain Water and other Bacteria, *Journ. Roy. San. Inst.*, vol. xxxv, No. 6, 1914.